AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for producing a serial connection of solar cells having integrated semiconductor elements, comprising the steps of:

incorporating one or more conductive elements into an insulating support layer in a pattern, whereby the conductive elements protrude from the surface of the support layer on at least one side of the support layer, and the pattern defines at least one separation line having a width B and comprising at least one conductive elements;

incorporating a plurality of spherical or grain-shaped semiconductor elements into the insulating support layer according to a pattern, whereby the semiconductor elements comprise substrate cores that are coated at least with one conductive back contact layer made of molybdenum and with one semiconductor layer made of a I-III-VI compound semiconductor arranged above it, the semiconductor elements protrude from the surface of the support layer on at least one side of the support layer, and the pattern provides that the areas next to a separation line or between several separation lines comprising conductive elements are fitted with semiconductor elements;

removing parts of the semiconductor elements on one side of the support layer until the back contact layer of the semiconductor elements is exposed;

applying a conductive back contact layer (50) onto the side of the support layer on which parts of the semiconductor elements have been removed;

applying a conductive front contact layer onto the side of the support layer on which no semiconductor elements have been removed, whereby before and/or after the applying of front contact layer and/or of the back contact layer ~~(50)~~, depositing a buffer layer made of CdS and/or a layer made of intrinsic zinc oxide, or a buffer layer made of CdS and/or a layer made of intrinsic zinc oxide had already been deposited onto the spherical or grain-shaped semiconductor elements employed;

making two separation cuts along a separation line comprising conductive elements, including making a first separation cut in the front contact layer and making a second separation cut in the back contact layer, the separation cuts being on different sides of the

separation line, and the separation cuts penetrating the back contact layer all the way to the support layer.

2. (Previously Presented) The method according to claim 1, wherein the spherical or grain-shaped semiconductor elements comprise a layer made of transparent conductive oxide (TCO).

3. (Previously Presented) The method according to claim 1, comprising in addition to removing parts of the semiconductor elements, removing parts of the conductive elements.

4. (Previously Presented) The method according to claim 1, comprising, in addition to removing parts of the semiconductor elements, removing part of the support layer.

5. (Previously Presented) The method according to claim 1, comprising applying the conductive elements and/or the semiconductor elements onto the support layer by means of scattering, dusting and/or printing, and thereafter incorporating said conductive elements and/or said semiconductor elements into the support layer.

6. (Currently Amended) The method according to claim 1, comprising <u>incorporating</u> several conductive elements in the form of spherical or grain-shaped particles, in the form of strips or in the form of a paste into the support layer.

7. (Previously Presented) The method according to claim 1, comprising arranging the conductive elements and/or the semiconductor elements into a pattern using an auxiliary means and placing the elements onto and/or into the support layer using the auxiliary means.

8. (Previously Presented) The method according to claim 1, wherein the support layer is a matrix with recesses into which the elements are incorporated.

9. (Previously Presented) The method according to claim 1, comprising incorporating the elements into the support layer by means of a heating and/or pressing procedure.

10. (Previously Presented) The method according to claim 1, wherein a separation line-comprising conductive elements extends between two edges of the support layer that are opposite from each other.

11. (Previously Presented) The method according to claim 1, comprising removing the elements and/or the support layer by grinding, polishing, etching, thermal energy input and/or by photolithographic processes.

12. (Previously Presented) The method according to claim 1, comprising applying the back contact layer and the front contact layer by a method selected from the group consisting of PVD methods, CVD methods and other methods that have been adapted to the type of the layer in question.

13. (Previously Presented) The method according to claim 1, comprising making the separation cuts using a method selected from the group consisting of cutting, scoring, etching, thermal energy input or by photolithographic processes.

14. (Previously Presented) The method according to claim 1, wherein the width of a separation line is in the order of magnitude of B = 10 μm to 3 mm.

15. (Previously Presented) The method according to claim 1, wherein the distance between two separation lines is in the order of magnitude of 1 mm to 3 cm.

16. (Currently Amended) A serial connection of solar cells having integrated semiconductor elements, wherein the serial connection ~~comprising~~comprises:

an insulating support layer into which one or more conductive elements are incorporated in a pattern, wherein the conductive elements protrude from the surface of the support layer on at least one side of the support layer, and the pattern defines at least one separation line having a width B and comprising at least one conductive element;

a plurality of spherical or grain-shaped semiconductor elements in the insulating support layer wherein the semiconductor elements comprise a substrate core that is coated at least with one conductive back contact layer made of molybdenum and with one semiconductor layer made of a I-III-VI compound semiconductor, and the semiconductor elements protrude from the surface of the support layer on at least one side of the support layer and form a pattern in which the areas next to a separation line or between several separation lines are fitted with semiconductor elements;

a conductive front contact layer on one side of the support layer on which the elements protrude from the layer;

a conductive back contact layer on the side of the support layer that is opposite from the front contact layer;

a buffer layer made of CdS and/or a layer made of intrinsic zinc oxide, or a buffer layer made of CdS and/or a layer made of intrinsic zinc oxide already on the spherical or grain-shaped semiconductor elements employed;

in each case, two separation cuts along a row of conductor elements wherein a first separation cut is made in the front contact layer and a second separation cut is made in the back contact layer, the separation cuts being on different sides of the row of conductive elements, and the separation cuts penetrate the back contact layer all the way to the support layer; and

on the side of the support layer on which the back contact layer of the solar cell is arranged, at least one of the semiconductor elements has a surface via which a direct contact is established between the back contact layer of the solar cell and the back contact layer of the semiconductor element.

17. (Previously Presented) A serial connection according to claim 16, wherein the support layer comprises a thermoplastic material.

18. (Previously Presented) The serial connection according to claim 16, wherein the support layer comprises a polymer selected from the group consisting of epoxides, polyurethanes, polyacrylics, polycarbonates, polyesters, and polyimides.

19. (Previously Presented) The serial connection according to claim 16, wherein a conductive element is formed by a paste or by a strip.

20. (Previously Presented) The serial connection according to claim 16, wherein a conductive element is formed by a spherical or grain-shaped particle.

21. (Previously Presented) The serial connection according to claim 20, wherein a conductive element comprises a conductive material in the form of a solid material, or a substrate core that is coated with a conductive material.

22. (Currently Amended) The serial connection according to claim 21, wherein a conductive element ~~comprising~~comprises copper in the form of a solid material or of a substrate core that is coated with copper.

23. (Previously Presented) The serial connection according to claim 16, wherein the semiconductor elements comprises a layer made of transparent conductive oxide (TCO).

24. (Currently Amended) The serial connection according to claim 16, wherein the separation line ~~comprises~~comprising conductive elements is essentially straight and extends between two edges of the support layer that are opposite from each other.

25. (Previously Presented) The serial connection according to claim 16, wherein the width of a separation line is in the order of magnitude of B = 10 μm to 3 mm.

26. (Previously Presented) The serial connection according to claim 16, wherein the distance between two separation lines is in the order of magnitude of 1 mm to 3 cm.

27. (Currently Amended) The serial connection according to claim 16, wherein the front contact layer ~~is made of~~ comprises a conductive material.

28. (Previously Presented) The serial connection according to claim 27, wherein the front contact layer comprises a transparent conductive oxide (TCO).

29. (Previously Presented) The serial connection according to claim 16, wherein the back contact layer comprises a metal, a transparent conductive oxide (TCO) or a conductive polymer.

30. (Previously Presented) The serial connection according to claim 29, wherein the back contact layer comprises a polymer selected from the group consisting of epoxy resins, polyurethanes, and polyimides having conductive particles selected from the group consisting of carbon, indium, nickel, silver, molybdenum, iron, nickel chromium, aluminum and corresponding alloys or oxides.

31. (Previously Presented) The serial connection according to claim 30, wherein the back contact layer comprises an intrinsic conductive polymer.

32. (Previously Presented) The serial connection according to claim 16, wherein the separation cuts are filled up with an insulating material.

33. (Previously Presented) The serial connection according to claim 16, wherein the serial connection is strip-like.

34. (Previously Presented) The serial connection according to claim 16, wherein the width of the serial connection is in the order of magnitude of 5 cm to 30 cm.

35. (Previously Presented) The serial connection according to claim 16, wherein the serial connection is joined to another serial connection in such a way that the back contact layer is in contact with a front contact layer of the other serial connection.

36. (Previously Presented) The serial connection according to claim 35, wherein the serial connection is joined to at least another serial connection in a shingle-like configuration, whereby the back contact layer lies on a front contact layer or the front contact layer lies on a back contact layer of the other serial connection.

37. (Previously Presented) The serial connection according to claim 35, wherein the back contact layer is joined by a conductive adhesive to a front contact layer of the other serial connection.

38. (Previously Presented) A photovoltaic module, characterized in that it comprises a serial connection according to claim 16.

39. (Previously Presented) The method according to claim 1, wherein the width of a separation line is in the order of magnitude of B = between 10 µm and 500 µm.

40. (Previously Presented) The method according to claim 1, wherein the distance between two separation lines is in the order of magnitude of between 3 mm and 5 mm.

41. (Previously Presented) The serial connection according to claim 16, wherein the width of a separation line is in the order of magnitude of B = between 10 µm and 500 µm.

42. (Previously Presented) The serial connection according to claim 16, wherein the distance between two separation lines is in the order of magnitude of between 3 mm and 5 mm.

43. (Currently Amended) The serial connection according to claim 16, wherein the width of the serial connection is in the order of magnitude of 5 cm to 30 cm, especially approximately 10 cm. ~~(JPZ was not sure about this one)~~

44. (Previously Presented) The serial connection according to claim 36, wherein the back contact layer is joined by a conductive adhesive to a front contact layer of the other serial connection.